



Quick Test - Proportionality

1. Two variables are connected by the relationship $y \propto x$. When $x = 0.2$, $y = 1.8$.
- Write a formula for y in terms of x
 - Work out y when $x = 0.16$
 - Work out x when $y = 29$

$$\begin{aligned} \text{(a)} \quad y &\propto x \\ y &= kx \\ 1.8 &= k \times 0.2 \\ 9 &= k \\ y &= \underline{\underline{9x}} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad y &= 9x \\ y &= 9(0.16) \\ &= 1.44 \\ y &= \underline{\underline{1.44}} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad y &= 9x \\ 29 &= 9x \\ \frac{29}{9} &= x \\ x &= \underline{\underline{3.2}} \end{aligned}$$

2. The cost of petrol for a journey is directly proportional to the distance travelled. Joe travels 130 miles and spends £15 on petrol. Calculate
- The cost of petrol for a journey of 190 miles
 - The length of a journey costing £12.75

$$\begin{aligned} C &\propto D \\ C &= kD \\ 15 &= k \times 130 \\ \frac{3}{26} &= k \end{aligned}$$

$$\begin{aligned} \text{(a)} \quad C &= \frac{3}{26} D \\ C &= \frac{3}{26} (190) \\ C &= \underline{\underline{\pounds 21.92}} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad C &= \frac{3}{26} D \\ 12.75 &= \frac{3}{26} D \\ 110.5 &= D \\ &= \underline{\underline{110.5 \text{ miles}}} \end{aligned}$$

3. A is inversely proportional to B. When $A = 4$, $B = 6$
- Write a formula for A in terms of B
 - Calculate B when $A = 12$
 - Calculate A when $B = 0.4$

$$\begin{aligned} \text{(a)} \quad A &\propto \frac{1}{B} \\ A &= \frac{k}{B} \\ 4 &= \frac{k}{6} \\ 24 &= k \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad A &= \frac{24}{B} \\ 12 &= \frac{24}{B} \\ B &= \frac{24}{12} \\ B &= \underline{\underline{2}} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad A &= \frac{24}{B} \\ A &= \frac{24}{0.4} \\ A &= \underline{\underline{60}} \end{aligned}$$